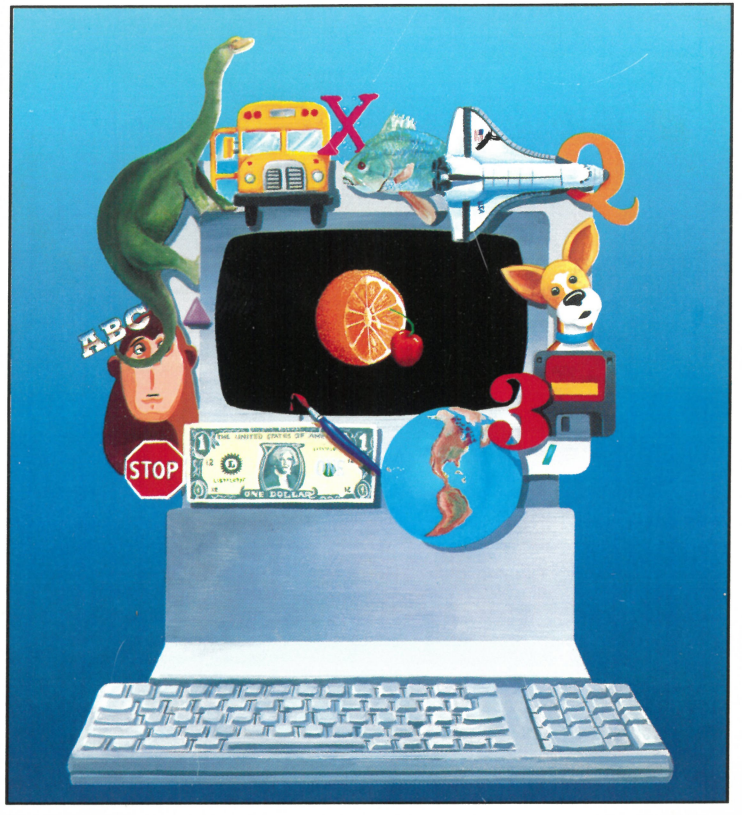
ORANGE CHERRY

TALKING SCHOOLHOUSE

SOFTWARE

SPACE SHUTTLE WORD PROBLEMS



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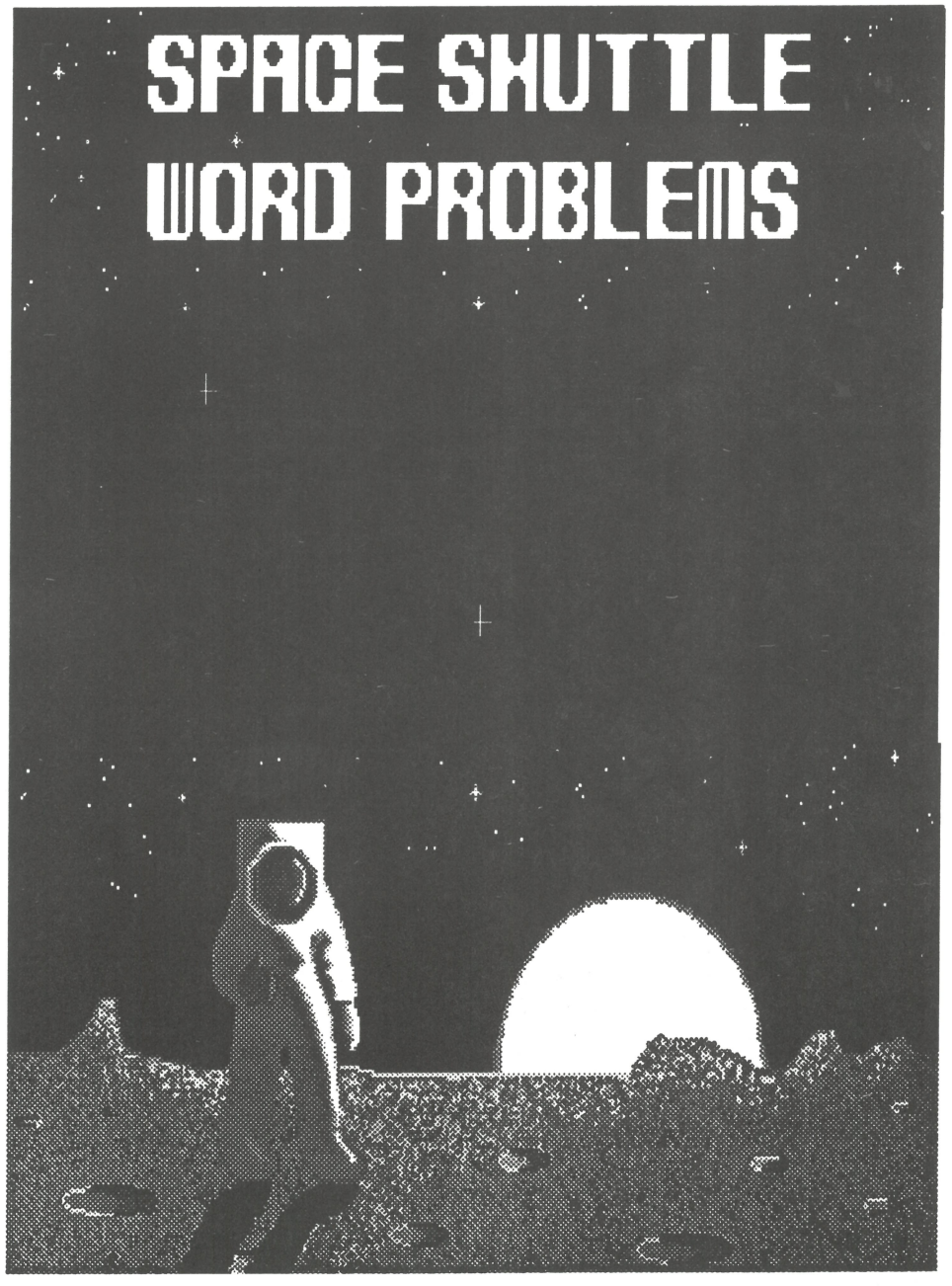

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BOOTING THE PROGRAM

Space Shuttle Word Problems is designed to run on the Apple IIGS (768K minimum memory) with a 3.5" disk drive. Insert the **Boot Disk** into the drive, label side up, then turn on your computer and monitor. The program will boot automatically.

INSTALLING THIS PROGRAM ON A HARD DRIVE

Apple IIGS: Installing this Program on a Hard Drive

1. Create a new folder on your hard disk by selecting "New Folder" from "File" on the desktop. Give the folder a name. In these instructions we will name the folder **Schoolhouse** and refer to it as such.

2. Insert the **Boot Disk** (or the only disk in a single-disk program) into your floppy drive and open it by double-clicking the mouse on the disk icon labeled **OC.BOOT.DISK** that appears on the desktop when the disk is inserted.

3. Use the mouse to click on, or select, all files named **Program** (eg: Program 1, Program B, etc.) as well as all files named **Data** (eg: Data 1, Data 2, etc).

4. Copy these files into the **Schoolhouse** folder. Do this by clicking the mouse on each file icon, holding down the mouse button, then dragging the highlighted file icons to the folder. Release the mouse button when the pointer is over the folder and both the file(s) and **Schoolhouse** folder are highlighted.

5. When the computer finishes copying these files, remove the **Boot Disk** and insert the **Program Disk** (if necessary) into the drive.

6. Open the **Program Disk** by double-clicking the mouse on the icon marked **OC.Prog.Disk**. As in step #3, copy all files marked **Program** and **Data** into your **Schoolhouse** folder. You may then remove the **Program Disk** from the drive.

7. To launch the program from your hard disk, open the **Schoolhouse** folder, then double-click on the application marked **Program**.

8. If you have other programs you wish to install on your hard disk, follow the same procedure, but be sure you create a separate new folder for each program.

Introduction

Space Shuttle Word Problems is a math program specifically designed for the Apple IIGS computer. It requires 768K minimum memory and a 3.5" disk drive. The program is tailored for children ages nine to twelve and helps develop and strengthen basic math skills while challenging students' reading ability with a word-problem format. Students will tackle a variety of addition, subtraction, multiplication, and division puzzles on their way to completing a full-scale space shuttle mission. High-resolution graphics, animation, and sound effects combine to create a richly rewarding learning experience for every child.

Space Shuttle Word Problems utilizes an innovative, highly interactive approach toward learning. Students use the mouse to direct the action, taking full command of the on-screen calculator as they tackle word problems that are pertinent to fulfilling a safe shuttle landing back on earth. Positive reinforcement in the forms of sound, graphics and clever animation consistently encourages users in their efforts. Students are led through each step of a shuttle mission, from pre-launch to landing, toward a handsome final reward screen. Users may also adjust the volume, take a second try at each question, or quit the program at any time.

Space Shuttle Word Problems provides children with immediate constructive feedback for all input. If students are unable to ascertain the correct answer after two attempts, the program provides it for them. At this point, students may also opt to click on the *show solution* button. The *show solution* option presents a step-by-step guide to solving each word problem. If students correctly answer the questions within a given stage of the space mission, they are rewarded with an animated sequence illustrating that particular phase of the mission. If students perform poorly on a given mission, they are encouraged to review the material and try a new mission.

Learning Objectives

Conceptual Objectives

Through the effective use of this program, children will learn that certain words and phrases imply mathematical operations that must be extrapolated and translated into an equation. Students should learn to differentiate between pertinent information and superfluous or even misleading information that is presented in each word problem. The word-problem format used in this program will help children read both for content and comprehension and the space-mission theme ensures that interest is maintained. The concepts of sequencing and cause and effect will also be enhanced.

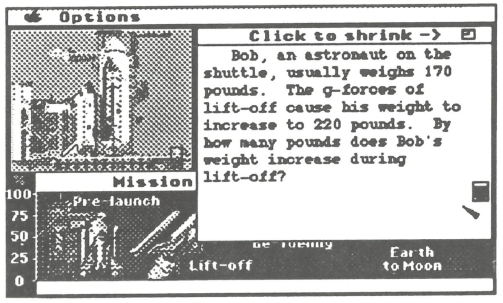
Skill Objectives

Students will gain valuable practice using addition, subtraction, multiplication, and division skills to solve a variety of math word problems. The association between visual representation and the written word or numeral is also developed and practiced repeatedly throughout the program. Additionally, use of the computer mouse greatly improves young children's eye-hand coordination and fine motor skills.

Affective Objectives

Students will attain feelings of confidence, control, and independence as they advance through **Space Shuttle Word Problems** at their own pace. They may repeat questions, check *show solution* screens to better understand the mechanics behind each problem, follow their progress on the *Mission Performance Profile* and advance toward various reward frames. Readers will feel the excitement of individual success as they strengthen math and reading skills, all within the context of a thrilling space challenge.

Program Description

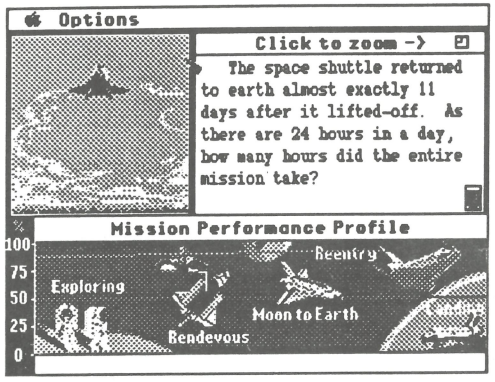

Options
Click to shrink ->
Bob, an astronaut on the shuttle, usually weighs 170 pounds. The g-forces of lift-off cause his weight to increase to 220 pounds. By how many pounds does Bob's weight increase during lift-off?
Mission
100
75
50
25
0
Pre-launch
Lift-off
Earth to Moon

Space Shuttle Word Problems presents students with a chance to tackle the building blocks of math –adding, subtracting, multiplying, dividing–within the framework of short reading challenges. The reader becomes part of a space shuttle team that is preparing for space travel. Each step of the mission's success depends on careful use of math and reading skills. Every stage of the journey pre-launch, lift-off, refueling, earth to moon, lunar landing, exploring, rendezvous, moon to earth, reentry, landing) is introduced by an opening paragraph that explains what importance this leg has to the overall success of the flight.

A comprehensive set of instructions is also provided at the beginning of the program and is available to the reader at all times. In order to input an answer, users must first click on the calculator icon at the bottom righthand corner of the question window. If this icon is not visible, click on the square in the upper righthand corner to stretch the window. Following an arrival at dawn to the launchpad, the student is then presented with three word problems per section of the mission.

The mission itself is filled with thrills and excitement as the reader helps the shuttle crew attain orbit around the earth, venture to the moon in a lunar vechicle, gather rock samples and explore, rendezvous with the shuttle in deep space, perform dangerous aerobraking as they attempt to reenter the earth's atmosphere and land successfully back on earth.

Program Description



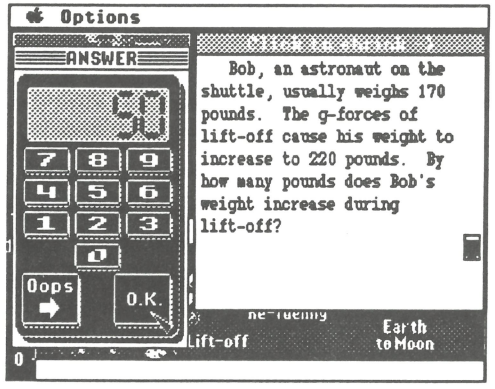
The word problems, such as the following example, challenge the reader while propelling the story forward:

It will take 150 minutes to load the space shuttle's liquid oxygen tank. It will take 170 minutes to load the space shuttle's liquid hydrogen tank. What is the total fueling time, in minutes?

Each of the shuttle's ten mission stages contain this type of problem, with two chances to answer the question correctly. If, however, the problem remains unsolvable to the reader, a special "solution" screen is available providing clear, concise steps as to how the numerical answer was reached. After the three questions of a mission leg are completed (whether they are answered correctly or incorrectly), high-resolution graphics are combined with majestic animations to propel the mission toward its next phase.

Throughout the mission, the student can chart the shuttle's course on the "Mission Performance Profile." This full-color chart allows a child to keep constant track of both the percentage of answers correct and the present stage of the mission. A blinking yellow and orange line pinpoints the shuttle's orbit on a handsome cyclorama.

Program Description


Options
ANSWER
50
7 8 9
4 5 6
1 2 3
0
Oops
O.K.
Bob, an astronaut on the shuttle, usually weighs 170 pounds. The g-forces of lift-off cause his weight to increase to 220 pounds. By how many pounds does Bob's weight increase during lift-off?
Lift-off
Earth to Moon

Each time the user chooses to answer a word problem, he or she must click the mouse on the tiny icon of the calculator located at the bottom righthand corner of the question screen. This will instantly bring up a larger functional calculator that will be used strictly for input of answers. Students are not able to use the calculator to perform mathematical functions for them. The mouse can then be clicked on any of the calculator's numbers and it will become illuminated in the answer window above.

At this point the reader may click on the *Ok* button to register the answer, or click on the button marked *Oops* to backspace and change the answer. If the answer is right, a small window stating "correct!" opens and the answer will be accordingly added to the current percentage score. If, however, the conclusion produced is incorrect, the reader is asked to "please try again." If a second wrong answer is given, "show solution" and "continue" buttons appear. This process is repeated throughout the various legs of the mission, leading the reader through a breathtaking journey of space, followed by a safe return to the Kennedy Space Center in Florida. With each successful mission, calculated by the percentage of correct answers, reward screens will appear to further the student's experience; imagine the excitement as each armchair astronaut returns to a ticker-tape parade or receives a Distinguished Service award!

Teaching Strategies

Adopting the concepts used in **Space Shuttle Word Problems**, ask students to create their own word problems, fashioning them from their favorite school subjects, hobbies, literature, etc. Ask each student to create a multi-part story into which a series of word problems can be inserted; make sure that the word problems they create are adding to the body and content of their story. Have students test their stories out on their classmates. Afterwards, discuss what elements of fiction make a good story. Talk about different ways that the math skills and reading techniques are utilized by both reader and author. Lead a discussion on what makes each story entertaining, considering how students applied concepts like drama, suspense, believability, irony, etc., to their tales.

Provide students with art supplies that will help them render pictures, puppets, sculptures, etc., that can accompany the shuttle mission and/or their own stories. Have students act out their projects with the help of these visual aids (a play, puppet show, picture presentation, etc.) and later discuss the elements of "presentation" that helped bring these written stories to life.

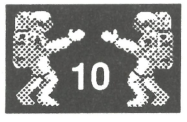
Provide students with background historical information on the space programs of various countries, with special emphasis placed on the Space Shuttle. Ask students to compile pieces of this information for their peers and create their own cyclorama. Divide students into various groups, i.e.- artists, historians, editors, etc. Certain students may wish to put detailed drawings of the universe on the ceiling and create a simulated planetarium Bring other teachers and students into the classroom to enjoy the exhibit, hear a short lecture, watch a play, attend a science fair, etc.

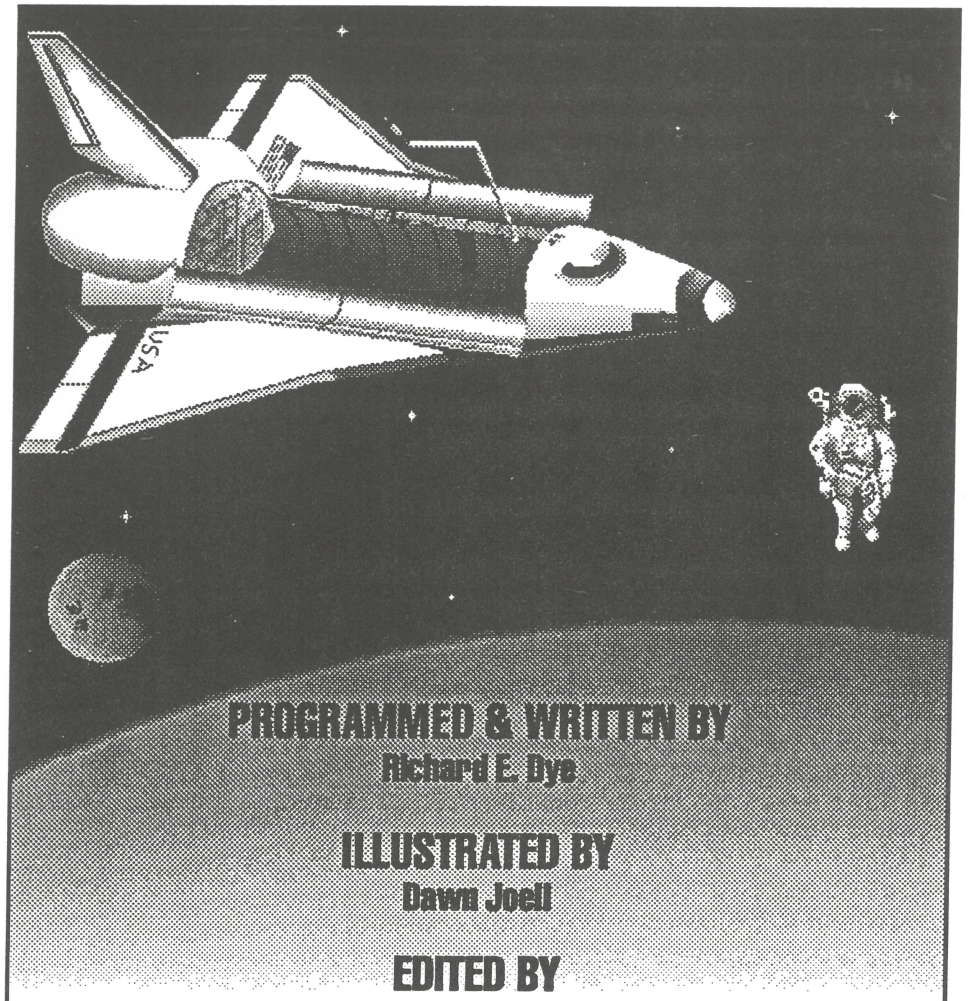
Teaching Strategies

Split the classroom into two space shuttle teams and give each student some duty to perform onboard their "ship." Ask each child to research this job and have he/she explain the function to the rest of the team. Find an open space (the gym, the schoolyard, the library, etc.) and adorn the area with student artwork that depicts the ten mission stages described in **Space Shuttle Word Problems**. Using word problems created by the opposing shuttle team, have each team navigate all ten legs of the mission; additional students can be used as "workers" at the various stations, reading the questions to the competing teams, keeping score, judging, etc. To add more difficulty to the game, set up the shuttle course in "maze" or "obstacle course" form; use existing gym equipment, make the teams collect "rock samples," add running or other physical requirements, etc. Make the event a timed race and, if funds allow, add prizes to the competition.

Using the above "game" format, challenge other classrooms to compete in various races. Use other subjects (English, Science, History, etc.) in place of the Space Shuttle and/or replace the math questions with trivia questions culled from other subjects.

Help students develop new ideas for the United States Space Program. Ask students to write out or draw ideas, like the "Lunar Lander," and explain their creations to the class. Collect the designs from the class and mail them to NASA in Florida or Texas; ask these agencies to send back additional information and/or photos for the students to study and enjoy.





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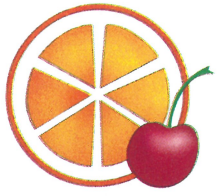

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